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rural real estate values in alberta

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RURAL REAL ESTATE VALUES IN ALBERTA

January - December: 1971

R. J. MILLER
W. S. PATTISON

RESOURCE ECONOMICS BRANCH
ECONOMICS DIVISION, ALBERTA DEPARTMENT OF AGRICULTURE
EDMONTON, ALBERTA

April, 1972

Honourable Dr. H. M. Horner
Minister

Dr. G. R. Purnell
Deputy Minister

FORWARD

Within the purview of "resource economics", the market for land is a most important indicator of changes in the demand for land for all uses. In Alberta, the bouyancy of the agricultural industry will be reflected in changes in the volume and the value of market transactions, since this industry is a large user of the land resource.

This publication, authored by R.J. Miller and W.S. Pattison, is the second in a series produced by the Resource Economics Branch about the Alberta rural real estate market. Over time trends will become apparent. Indeed, there has been a 7% rise in the 1971 agricultural real estate values compared to the 5 month period August to December 1970. A spatial pattern is emerging already with only 1½ years data. With time a data base will be established which will provide another economic view of the land resource of the province.

Caution is urged where data might be used for bench marks for individual transactions. Many factors enter into the decision to purchase land and buildings. These include the estimated returns over time to the purchaser, the proximity to urban centers, the land's capability for production of agricultural products, the buyer's optimism about the future, the location of the real estate in relation to the buyer's present holdings, the amount of cultivated and uncultivated land in the parcel to be exchanged, and the level of taxation. One or a number of these factors could cause a significant deviation from averages indicated in the report. The report does not indicate what the land and buildings are worth to the prospective buyer or seller involved in a specific transaction. Rather it tells what buyers and sellers thought some real estate was worth between January 1 and December 31st 1971. Projections about the future still remain the perogative of the individual enterpreneur.

G.B. Parlby

ACKNOWLEDGEMENTS

The authors wish to acknowledge the contributions of a number of individuals who spent many hours in preparing the data and compiling the report. In particular the work of Miss Goldie Lisec in preparing the data for key-punching and preparing several maps is appreciated. Thanks are due as well to members of the Systems Design and Data Analysis Branch and to Mrs. Shirley Jackson who typed the report.

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CHAPTER I

INTRODUCTION

Objectives of the Study:

The possession and control of real estate, traditionally has played an important role in North American society. This role will likely continue to be an important consideration in the lives of many individuals. Consequently, information on real estate values is of interest to many individuals and agencies - both public and private. This report is a statistical summary of rural real estate market values in Alberta covering all sales registered in the Land Titles Offices in 1971 and is the second report of this nature compiled by the Resource Economics Branch.

Information on rural real estate values, more specifically, can prove useful for the following purposes:

1. Determining comparative real estate values in various regions of the province.

2. Establishing broad property valuation guidelines for individuals or agencies who are involved in real estate appraisal.

3. To provide an indication of the bouyancy of the rural economy. Real estate sales, as measured by both the volume and the value of sales is perhaps one of the most accurate 'barometers' of the state of the rural economy.

4. Establishing a body of price data for the rural real estate resource of the province. Such information is essential to public policy makers for resource allocation decisions.

5. Research applications - for example, the relationship of rural real estate values to trends in net farm income, the volume of grain sales, etc. could be investigated.

This information of course would become more useful over time with the development of a continuing series of such data and applications in addition to those indicated above might become apparent.

Analytical Procedures:

The raw data on rural real estate sales was obtained from the Department of Municipal Affairs who in turn obtain it from the duplicate certificates of title provided by the Land Titles Offices in the Province. Each parcel transacted was appropriately coded and classified as to Canada Land Inventory agricultural capability rating where such information was available. This data was then key-punched onto I.B.M. cards in preparation for computer processing. Basically, the same programs of analysis and error searching the data were used in summarizing the data into the desired form as were developed for the intitial report for 1970. 1/ However, a few changes were instituted which are explained in subsequent chapters.

The real estate values shown are based upon the 'assurance fund' values. These values, in the majority of instances, are the actual transaction or sale values of the property. 2/ In other instances, it is an assessment of the true market value of the property determined and vouched as such by the purchaser of the property. Consequently, the values shown in the various tables of this report represent market values of rural real estate.

1/ The major analytical program which was used to analyse the data was the "Statistical Package for the Social Sciences" (S.P.S.S.).

2/ Personal communication with the Land Titles Office indicated that in approximately 90% of the instances, the assurance fund value is the actual sale value of the property. The assurance fund is established to cover liability claims against the Land Titles Office as a result of error in issuing title to property. The fee is based upon the difference between the previous assurance fund value and the current value.

Identification of Counties, Municipal Districts, Improvement Districts and Special Areas in Alberta

The following list outlines the number and the names of the various counties and municipal districts in Alberta. In addition there are twenty-four Improvement Districts and three Special Areas which are identified by number only.

County No.	Name	County No.	Name
1	Grande Prairie	17	Mountain View
2	Vulcan	18	Paintearth
3	Ponoka	19	St. Paul
4	Newell	20	Strathcona
5	Warner	21	Two Hills
6	Stettler	22	Camrose
7	Thorhild	23	Red Deer
8	Forty Mile	24	Vermilion River
9	Beaver	25	Leduc
10	Wetaskiwin	26	Lethbridge
11	Barrhead	27	Minburn
12	Athabasca	28	Lac St. Anne
13	Smoky Lake	29	Flagstaff
14	Lacombe	30	Lamont
16	Wheatland	31	Parkland

M.D. No.	Name	M.D. No.	Name
6	Cardston	52	Provost
9	Pincher Creek	61	Wainwright
14	Taber	87	Bonnyville
26	Willow Creek	90	Sturgeon
31	Foothills	92	Westlock
34	Acadia	130	Smoky River
44	Rocky View	133	Spirit River
47	Starland	135	Peace
48	Kneehill	136	Fairview

Improvement Districts are numbered 1 to 24, however, I.D.'s 4, 9, 12, 13 and 24 are national parks; I.D. 3 is a Military Experimental Range. The Special Areas in east-central Alberta are numbered 2, 3 and 4. The map on the following page shows the location of the counties, M.D.'s, I.D.'s and S.A.'s in Alberta.

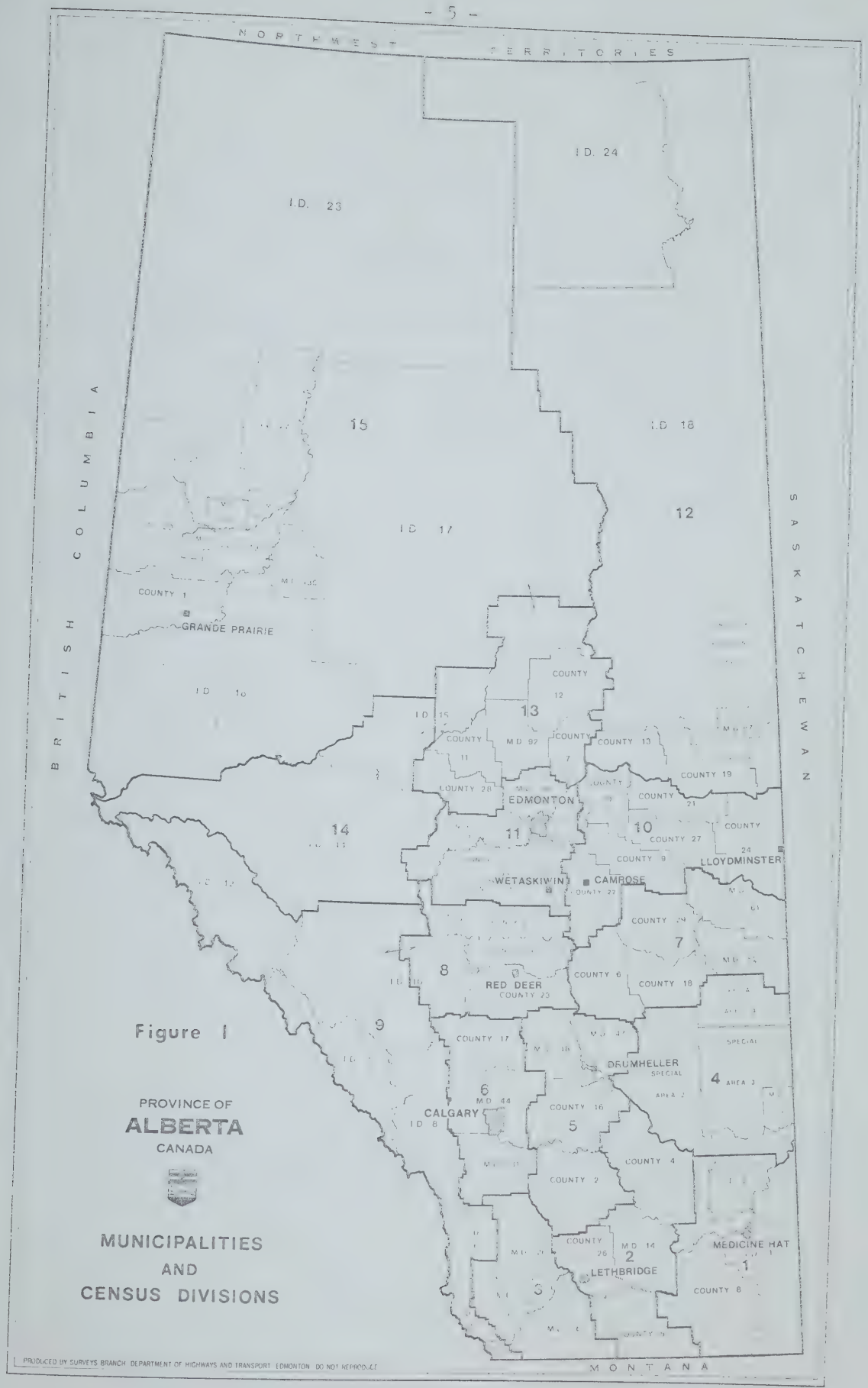

Figure 1

PROVINCE OF
ALBERTA
CANADA

MUNICIPALITIES AND CENSUS DIVISIONS

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CHAPTER II

VOLUME OF RURAL REAL ESTATE TRANSACTED

Total Acreage and Value of Rural Real Estate Sold in 1971:

The following table (Table 1) outlines the total number of observations [1], acreage and value for all rural real estate sales for each county, municipal district, improvement district and special area in Alberta for 1971. Division of the total dollar value by the total acreage will yield the overall average value per acre for all rural real estate sold. However, these values should not be construed as agricultural values as a number of counties, and municipal districts, particularly surrounding the larger urban centres, have a significant volume of small acreage sales which tend to exert an upward influence on real estate values. Sales which can be construed as agricultural are given in Chapter 2. Provincially, however, it is interesting to note that the average value of all rural real estate transacted was $77.47 per acre based upon sales of about 2.2 million acres at a total value of nearly 171 million dollars. The comparable value per acre based upon all rural real estate sales in the last five months of 1970 was $67.35 per acre. Thus an increase of about 15% in real estate values is indicated over 1970 values.

1/ The total number of individual parcels registered at the Land Titles Offices. One sale may constitute 1 or more title registrations.

TABLE 1

VOLUME OF RURAL REAL ESTATE TRANSACTED IN ALBERTA: 1971

County No.	Total Number of Observations	Total Acreage Sold	Total Value ($)
1	295	54640	2815051
2	289	63966	5088509
3	183	33698	2917974
4	182	36275	2571235
5	185	45741	3080184
6	169	34881	1731402
7	167	25128	1287043
8	236	55476	2843985
9	165	30021	1745319
10	249	36626	5593991
11	108	18279	1113905
12	219	35875	1323202
13	157	26353	1046745
14	183	27173	4819705
16	243	58029	6030976
17	292	52541	5436811
18	141	36456	1334351
19	231	41614	1442685
20	156	18499	5677603
21	161	25127	1012055
22	215	35732	2917080
23	282	42973	4182409
24	343	69883	3480594
25	321	45097	4465522
26	235	36531	4567417
27	157	29145	1265436
28	262	45472	2802337

County No.	Total Number of Observations	Total Acreage Sold	Total Value ($)
29	252	51457	2966357
30	214	31525	1741388
31	349	48366	8735072
Total	6641	1192579	96036343

M.D. No.	Total Number of Observations	Total Acreage Sold	Total Value ($)
6	167	30205	2355233
9	184	34775	2919275
14	182	34267	3027901
26	222	54042	3822392
31	420	69299	10668650
34	35	7797	338980
44	474	74587	12301467
47	183	42527	3183750
48	188	35733	3056303
52	224	48566	2019006
61	233	48875	2179792
87	160	23627	899759
90	230	32792	6042874
92	228	36085	2683572
130	121	21492	1136774
133	40	6096	261316
135	86	13476	690140
136	40	6725	341439
Total	3417	620966	57928623

I.D. No.	Total Number of Observations	Total Acreage Sold	Total Value ($)
1	244	52147	2886476
2	31	7642	449639
5	13	1576	190590
6	13	4072	275884
7	25	1880	108138
8	38	8744	1035755
10	213	33187	2064626
11	3	329	344779
14	216	30747	1228589
15	104	15749	493611
16	86	19604	640379
17	193	30610	1173679
18	197	29064	723784
19	87	16735	679518
20	116	22955	710189
21	107	22238	714036
22	119	20221	717187
23	57	10134	385525
Total	1862	327634	14822384

S.A. No.	Total Number of Observations	Total Acreage Sold	Total Value ($)
2	128	31543	987883
3	102	24847	815914
4	47	4037	363115
Total	277	65427	2166912

Provincial Total: 12197 2206606 170954262

The Proportion of Rural Real Estate Transacted

Table 2 outlines the relative rate of real estate sales for the various counties, M.D.s, etc. in 1971. The turnover rate in terms of the percentage of the total deeded acreage sold indicates both the desire of land owners to sell property and the willingness of buyers to purchase it. However, as sales normally are initiated by the seller wishing to dispose of property, the higher percentages indicate regions where a relatively higher proportion of land owners wish to dispose of their property.

The total deeded acreage shown in Table 2 is the total assessed acreage for 1969. Since 1970 certain leased public lands have been subject to assessment for taxation purposes, consequently, a later base than 1969 could not be used for this purpose. A possible discrepancy to the current deeded acreage could result from additions to deeded acreage from lands which were publicly owned in 1969 or vise-versa. This discrepancy, however, should not be large.

Figure 2 on page 10 is a graphic representation of the turnover rates given in Table 2. Computer mapping techniques were used to derive this map, however, the boundaries shown should not be interpreted as a precise representation of changes in the turnover rate as the mapping technique involves interpolation between data points.[1/]

1/ The mapping program used was Symap, version 5, developed at the Laboratory for Computer Graphics and Spatial Analysis, Harvard University, Cambridge, Massachusetts. This program was adopted for the province of Alberta data centre by the Systems Design and Data Analysis Branch, Alberta Department of Agriculture.

TURNOVER RATE OF RURAL REAL ESTATE TRANSACTED, 1971

County No.	Total Acreage Sold	Total Deeded Acreage*	Percent of Total Deeded Acreage Sold %
1	54640	964282	5.7
2	63966	1093437	5.8
3	33698	656222	5.1
4	36275	1447511	2.5
5	45741	914415	5.0
6	34881	947445	3.7
7	25128	430419	5.8
8	55476	1181617	4.7
9	30021	776106	3.9
10	36626	609600	6.0
11	18279	449168	4.1
12	35875	699265	5.1
13	26353	412250	6.4
14	27173	679070	4.0
16	58029	1093783	5.3
17	52541	881394	6.0
18	36456	779920	4.7
19	41614	625227	6.7
20	18499	348472	5.3
21	25127	618198	4.1
22	35732	820193	4.4
23	42973	961487	4.5
24	69883	1147787	6.1
25	45097	761958	5.9
26	36531	675867	5.4
27	29145	785878	3.7
28	45472	617857	7.4
29	51457	991158	5.2
30	31525	582466	5.4
31	48366	676338	7.2
Total	1192579	23628790	5.0

M.D. No.			
6	30205	741122	4.1
9	34775	547577	6.4
14	34267	761269	4.5
26**	-----	-------	---
31	69299	800454	8.7
34	7797	200190	3.9
44	74587	979634	7.6
47	42527	559082	7.6
48	35733	815663	4.4
52	48566	727571	6.7
61	48875	767731	6.4
87	23627	411452	5.7
90	32792	479355	6.8
92	36085	667610	5.4
130	21492	376289	5.7
133	6096	169598	3.6
135	13476	174990	7.7
136	6725	217540	3.1
Total	566924	9397127	6.0

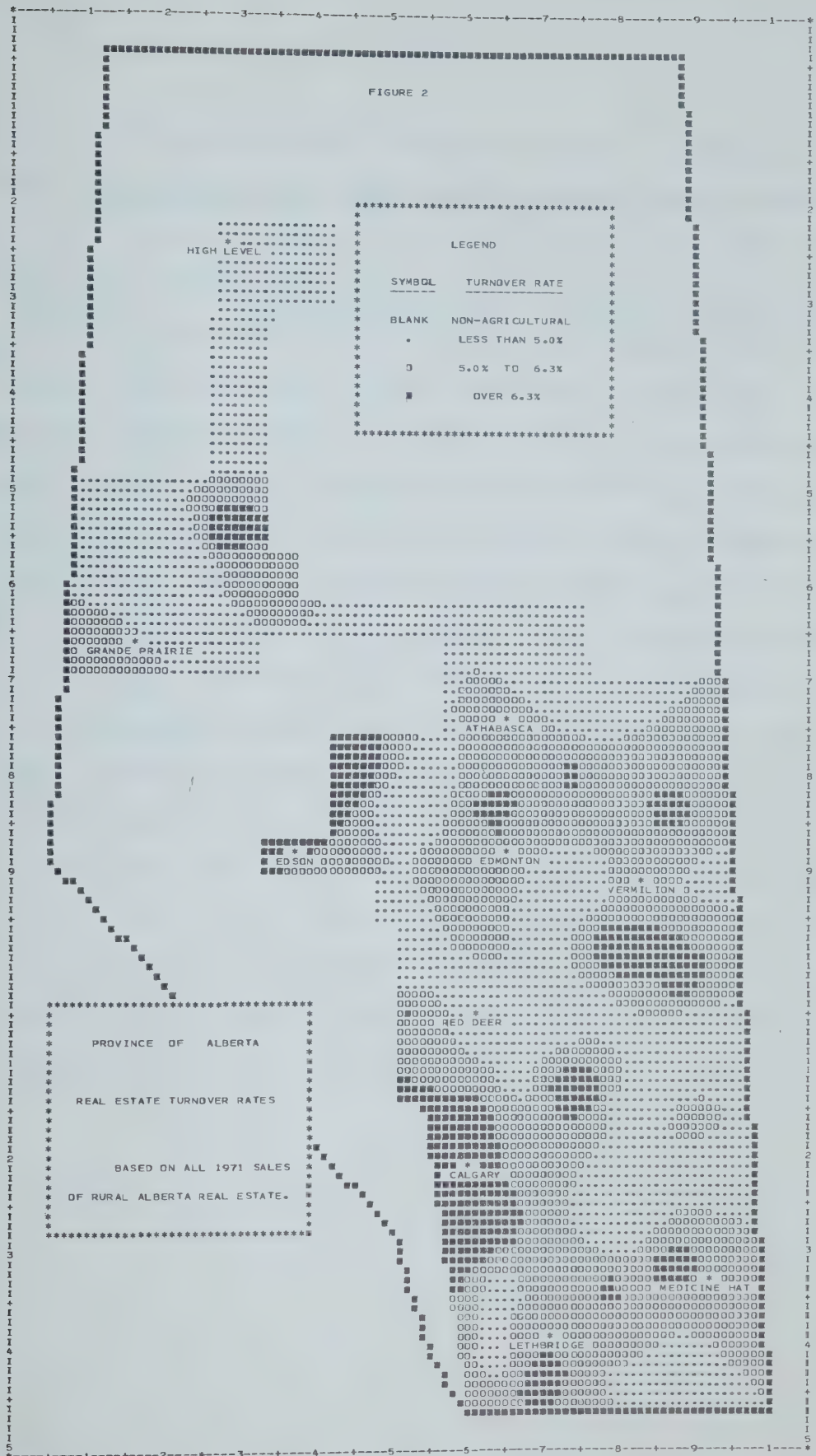
I.D. No.	Total Acreage Sold	Total Deeded Acreage*	Percent of Total Deeded Acreage Sold %
1	52147	934570	5.6
2	7642	114236	6.7
5	1576	30558	5.2
6	4072	63629	6.4
7	1880	35180	5.3
8	8744	45964	19.0
10	33187	531959	6.2
11	329	13699	2.4
14	30747	487169	6.3
15	15749	195136	8.1
16	19604	418882	4.7
17	30610	663311	4.6
18	29064	783397	3.7
19	16735	398717	4.2
20	22955	525198	4.4
21	22238	473158	4.7
22	20221	503793	4.0
23	10134	258218	3.9
Total	327634	6476774	5.1

S.A. No.			
2	31543	733667	4.3
3	24847	443647	5.6
4	9037	350459	2.6
Total	65427	1527773	4.3
Provincial Total**	2152564	41030464	5.2

* The "Total Deeded Acreage" is the "Total Assessed Acreage" for 1969, given in Municipal Statistics, Including Improvement Districts and The Special Areas for the Year Ended December 31, 1969 by the Department of Municipal Affairs, Edmonton, Alberta.

** The total deeded acreage is unavailable for MD #26, hence it is not included in the provincial total

FIGURE 2



SYMAP

Examination of the data in Table 2 (illustrated graphically in Figure 2) indicates that the counties with the highest turnover rate are #31 Parkland and #28 Lac Ste. Anne, adjacent counties west of Edmonton. The M.D.s with the highest turnover rate are #31 Foothills and #44 Rocky View adjacent to the city of Calgary, #47 Starland, #90 Sturgeon, north of Edmonton and #135, the M.D. of Peace. The I.D.s with the highest turnover rate are #8, west of Calgary in the foothills region and #15, the Whitecourt region of Alberta. This data suggests that proximity to large urban centres is one of the major factors influencing the relative amount of real estate transacted. One might also hypothesize that different economic conditions throughout the province will influence the turnover rate. The high turnover rates in the M.D. of Peace and in I.D. #15 possibly are influenced by such conditions.

Provincially, 5.2% of the total deeded acreage changed ownership in 1971. This turnover rate indicates an average ownership term of about 19 years.

The following table illustrates the distribution of land title registrations by acreage size class (Table 3).

TABLE 3

DISTRIBUTION OF LAND TITLE REGISTRATIONS BY SIZE CLASS

Size Class	Relative Frequency (%)	Cumulative Frequency (%)
to 5 acres	4.5	4.5
5+ - 20 acres	4.2	8.7
20+ - 60 acres	4.0	12.7
60+ - 100 acres	6.1	18.8
100+ - 150 acres	6.3	25.1
150+ - 170 acres	51.7	76.8
170+ - 310 acres	4.6	81.4
310+ - 330 acres	12.9	94.3
> 330 acres	5.7	100.0

One would expect that the majority of sales up to 160 acres in size would constitute one individual title registration. Transactions comprising more than 160 acres frequently would involve more than one title registration. This probability is indicated in Table 3 as more than 50% of the title registrations are in the quarter section size class.

CHAPTER III

AGRICULTURAL REAL ESTATE VALUES

Values by County, Municipal District, Improvement District and Special Area

The following table contains statistics on the total number of observations, the total acreage sold, the average value per acre, the associated standard deviation and the comparable value per acre in 1970 for each of the counties, M.D.s, I.D.s and S.A.s in Alberta. [1/] Only agricultural transactions are included; for this purpose agricultural sales were defined as all transactions greater than 60 acres in size and excluding sales within the defined urban peripheries of Edmonton and Calgary. The area within these peripheries is defined on page 29.

The standard deviation per acre is a measure of the amount of variation in real estate values. Normally one would expect that the range of values within one standard deviation of the mean (average $\pm$ one standard deviation) would contain 2/3 of all observations. Thus, in Table 4, the average value per acre plus or minus the standard deviation indicates the typical range of values found in each of the counties, M.D.s, etc. Because of the diversity of land quality frequently found within a given region as well as numerous other considerations, real estate prices typically exhibit considerable variation. Hence, as illustrated in Table 4, the standard deviation in relation to the average value often is high.

Figure 3 is a diagramatic representation of the average real estate values for 1971 given in Table 4. Computor mapping techniques (Symap, version 5) were used to compile this map.

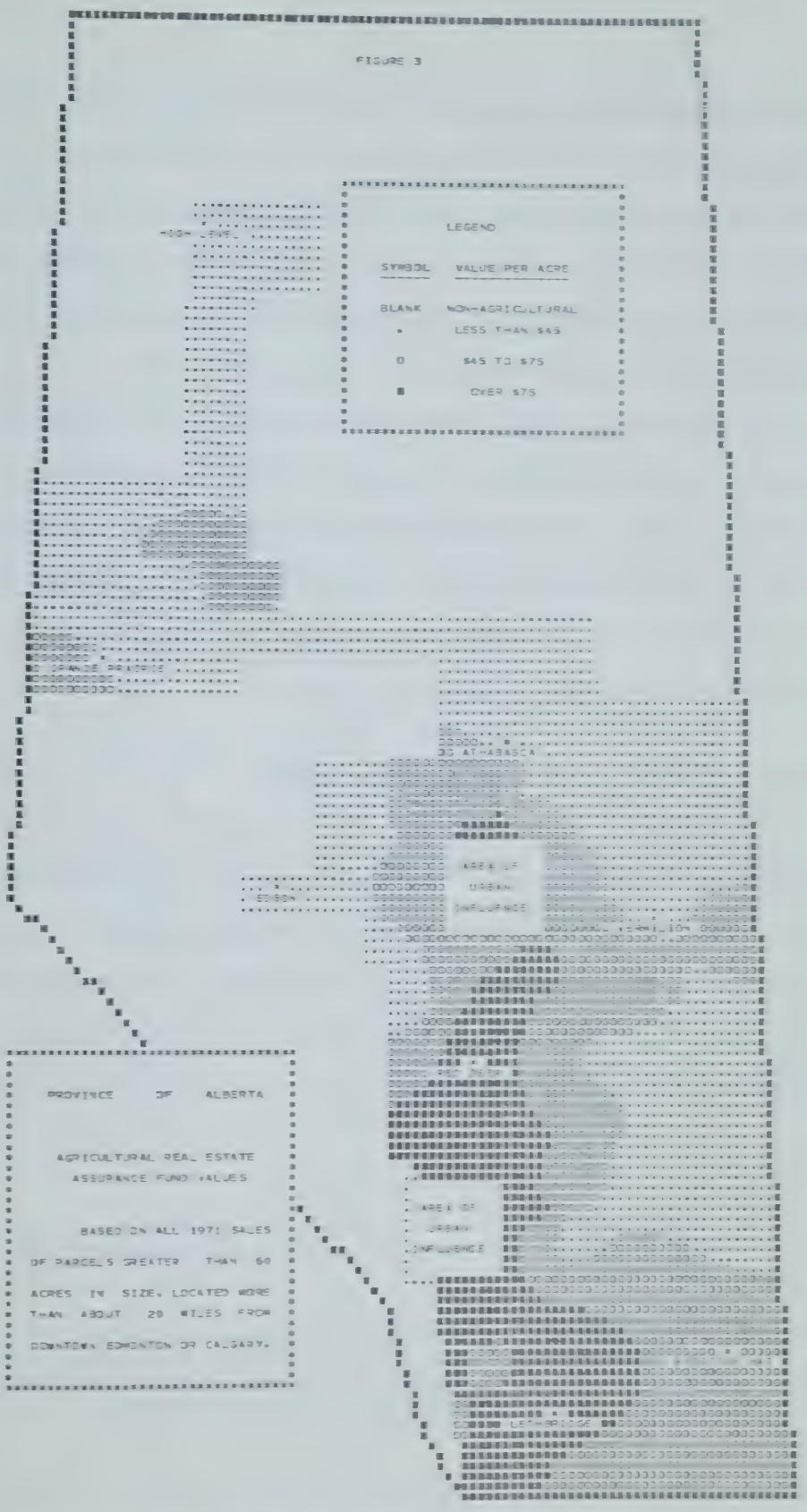
1/ 1970 values are based upon all agricultural sales in the latter 5 months of the year.

AGRICULTURAL REAL ESTATE VALUES IN ALBERTA
(by County, M.D., I.D., and S.A.)

County No.	Total Number of Observations	Total Acreage Sold 1971	Average Value Per Acre 1971 $	Standard Deviation Per Acre 1971 $	Average Value Per Acre 1970 $	M.D. No.	Total Number of Observations	Total Acreage Sold 1971	Average Value Per Acre 1971 $	Standard Deviation Per Acre 1971 $	Average Value Per Acre 1970 $
1	262	53427	49.69	50.43	59.37	47	174	42172	69.88	39.22	66.34
2	267	62694	78.56	43.94	57.70	48	172	35323	78.91	49.17	66.68
3	164	33179	81.97	54.08	57.40	52	212	47925	41.70	27.02	37.22
4	151	35328	63.49	47.91	67.56	61	220	48483	43.86	32.61	40.45
5	169	45062	65.54	46.14	74.10	87	133	23059	34.16	24.24	35.14
6	150	34620	46.83	32.48	51.16	90	53	8818	102.26	80.56	54.17
7	147	24289	47.03	36.21	48.42	92	193	34948	68.33	53.28	64.31
8	219	55218	50.28	34.08	48.79	130	113	21090	50.65	30.41	43.94
9	131	26897	54.01	28.69	54.56	133	37	6057	42.53	35.54	28.45
10	208	35644	70.30	86.34	58.94	135	73	13055	48.98	62.11	57.60
11	95	17872	58.43	43.87	52.88	136	33	6401	48.05	29.10	50.64
12	201	35307	35.81	28.85	30.93	Total	2277	489304	66.00		63.32
13	144	26198	39.30	43.95	45.58	I.D. No.					
14	139	26214	88.55	72.51	80.10	1	219	50822	52.55	37.11	43.74
16	191	53687	76.35	46.52	68.24	2	27	7363	49.95	36.33	36.83
17	261	52126	100.16	52.94	88.68	5	6	1416	104.65	88.90	34.94
18	136	36145	36.73	26.61	29.43	6	12	4062	63.48	22.06	65.00
19	205	40544	33.90	32.81	35.70	7	7	1344	27.80	16.95	21.74
20*	2	278	91.73	9.65	-----	8	35	8665	116.30	159.22	141.99
21	148	24275	40.22	24.12	35.70	10	175	32005	57.38	51.73	58.57
22	172	32420	79.51	37.91	66.35	11	2	321	4.06	.33	19.21
23	245	42313	90.04	63.98	82.26	14	174	30034	36.58	54.86	37.76
24	317	68951	48.67	46.18	42.92	15	86	15326	27.83	28.34	16.15
25	166	28662	59.71	42.31	56.54	16	82	19578	32.02	19.45	33.14
26	175	34838	114.78	122.46	95.29	17	168	29961	33.79	23.62	30.38
27	145	28312	41.50	24.87	43.90	18	171	27953	21.85	17.70	19.48
28	207	40783	45.02	40.49	40.05	19	83	16688	37.86	19.61	35.22
29	236	51308	56.62	34.82	57.67	20	111	22804	30.11	17.28	46.73
30	180	29108	52.29	30.38	53.74	21	104	22189	31.78	15.47	26.00
31	141	23918	64.84	90.59	48.01	22	111	19986	32.11	19.86	25.35
Total	5374	1099617	61.94		57.37	23	53	10077	32.20	24.81	27.99
M.D. No.						Total	1626	320594	40.83		36.08
6	139	29312	75.99	49.03	50.67	S.A. No.					
9	158	34076	77.70	73.11	55.95	2	115	30685	30.79	30.08	23.68
14	153	33510	85.46	61.76	84.81	3	96	24576	28.28	17.71	38.15
26	209	53454	69.00	37.24	56.55	4	40	8403	38.90	27.98	37.64
31	111	28555	98.00	61.76	100.05	Total	251	63664	30.89		33.98
34	35	7977	42.50	55.44	35.39	Provincial Total	9528	1973179	58.53		54.50
44	59	15089	100.95	62.27	130.61						

* County 20 is nearly entirely within the defined urban periphery of Edmonton, consequently nearly all sales have been excluded because of non-agricultural considerations.

FIGURE 3



SYMAP

The weighted average value for all counties was $61.94 per acre, similarly, the average value for all municipal districts was $66.00 per acre, the I.D.s averaged $40.83 per acre and the special areas averaged $30.89 per acre. Most counties and M.D.s, etc., exhibited an increase in value over the 1970 average. Provincially, the average agricultural real estate value was $58.53 per acre compared to $54.50 per acre in 1970 - an increase of 7.4%.

The highest county values occured for the County of Lethbridge #26 at $114.78 per acre and the County of Mountain View #17 at $100.16 per acre. The M.D. of Sturgeon #90 had an average value of $102.26 per acre followed by the M.D. of Rocky View #44 and the M.D. of Foothills #31 with average values of $100.95 and $98.00 respectively. The highest I.D. values occured in the foothills region southwest of Calgary, numbers 8, 5, and 6.

Agricultural Values in Relation to Soil Ratings

Tables on the following pages outline agricultural real estate values [1/] in relation to the Canada Land Inventory soil capability classification system. [2/] In this system, the mineral soils are rated from one to seven. Class 1 soils have no significant limitations for crop production; the poorest soils, class 7, have no potential for agricultural use. Class 1 to 4 are considered to be arable soils capable of producing cultivated crops, class 5 soils are capable for use as

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1/ All sales greater than 60 acres in size and excluding the defined urban peripheries.

2/ This classification system rates agricultural soils from 1 to 7 in relati to the 'potentialities and limitations' for agricultural use. See the Canada Land Inventory, Report No. 2, Soil Capability Classification for Agriculture, 1965. Department of Forestry, Ottawa

permanent hay or pasture and class 6, only for use as native pasture. A soil capability class is defined as one with the same relative degree of limitation or hazard (but not necessarily with the same kind of limitation or hazard) for agricultural use. In this rating system, climatic limitations or hazards have been considered as well as the various soil characteristics. Organic soils, frequently found in the wooded regions of the province, are not given a capability rating, however, in the following tables such soils are rated as #9.

Table 5 indicates the relationship of the average values per acre to capability ratings provincially for all available C.L.I. maps. (The relationship of average values to capability ratings for each individual map is given in Table 6.)

TABLE 5

AGRICULTRUAL VALUES IN RELATION TO C.L.I. RATINGS
(ALL C.L.I. MAPS)

Agricultural Capability Rating	Number of Observations	Average Value Per Acre 1971 $	Standard Deviation Per Acre 1971 $	Average Value Per Acre 1970 $
1	336	103.58	63.15	83.19
2	1504	74.17	62.12	63.98
3	2053	62.43	51.26	53.00
4	1598	44.71	36.54	40.17
5	625	49.27	43.81	42.97
6	401	42.29	41.04	44.26
7	78	45.60	54.94	63.05
9 (Organic)	122	42.06	53.89	40.05
Total	6717	59.25		50.56

Examination of the average value per acre in Table 5, suggests that the mean values for the arable soils (#1 to 4) show a definite difference - declining in value as the soil rating declines. However the observed differences between average values comparing the poorest arable soils (class 4), the non-arable soils (class 5 and 6), the non-agricultural soils (class 7) and organic soils decline in both magnitude and consistency.

The statistical significance of observed differences in mean values can be determined using the Z-test statistic. This test indicates the degree of confidence one can have that observed differences in mean values are statistically significant. The formula for the Z-test statistic is -

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

This statistic takes into consideration the average values ($\bar{X}$), the amount of variation between observations (σ^2) and the number of observations (n) in the two classes being compared. Thus, if there is a large amount of variation between observations within classes in relation to the number of observations, the observed difference in mean values possibly would not be significant. Conversely, if there was little variation between observations within classes in relation to the number of observations, the observed difference in mean values likely would be significant. At the 95% level of confidence the following

results were obtained:

Between class 1 and 2 land - observed differences are significantly different.

Between class 2 and 3 land - observed differences are significantly different.

Between class 3 and 4 land - observed differences are significantly different.

Between class 4 and 5 land - observed differences are significantly different.

Between class 5 and 6 land - observed differences are significantly different.

Between class 6 and 7 land - observed differences are significantly different.

Between class 4 and 9 land - observed differences are significantly different.

Because of the large number of observations [1/] all observed differences in average values shown in Table 5 are significantly different.

Figure 4 on the following page depicts the regions of the province for which C.L.I. maps were available in 1971. In total, maps were available for about 70% of all agricultural sales. Table 6 on pages 21 and 22 outline average real estate values in relation to C.L.I. agricultural capability ratings for each C.L.I. map indicated in Figure 4.

1/ The number of observations (n) were weighted by the total number of acres applicable to each class.

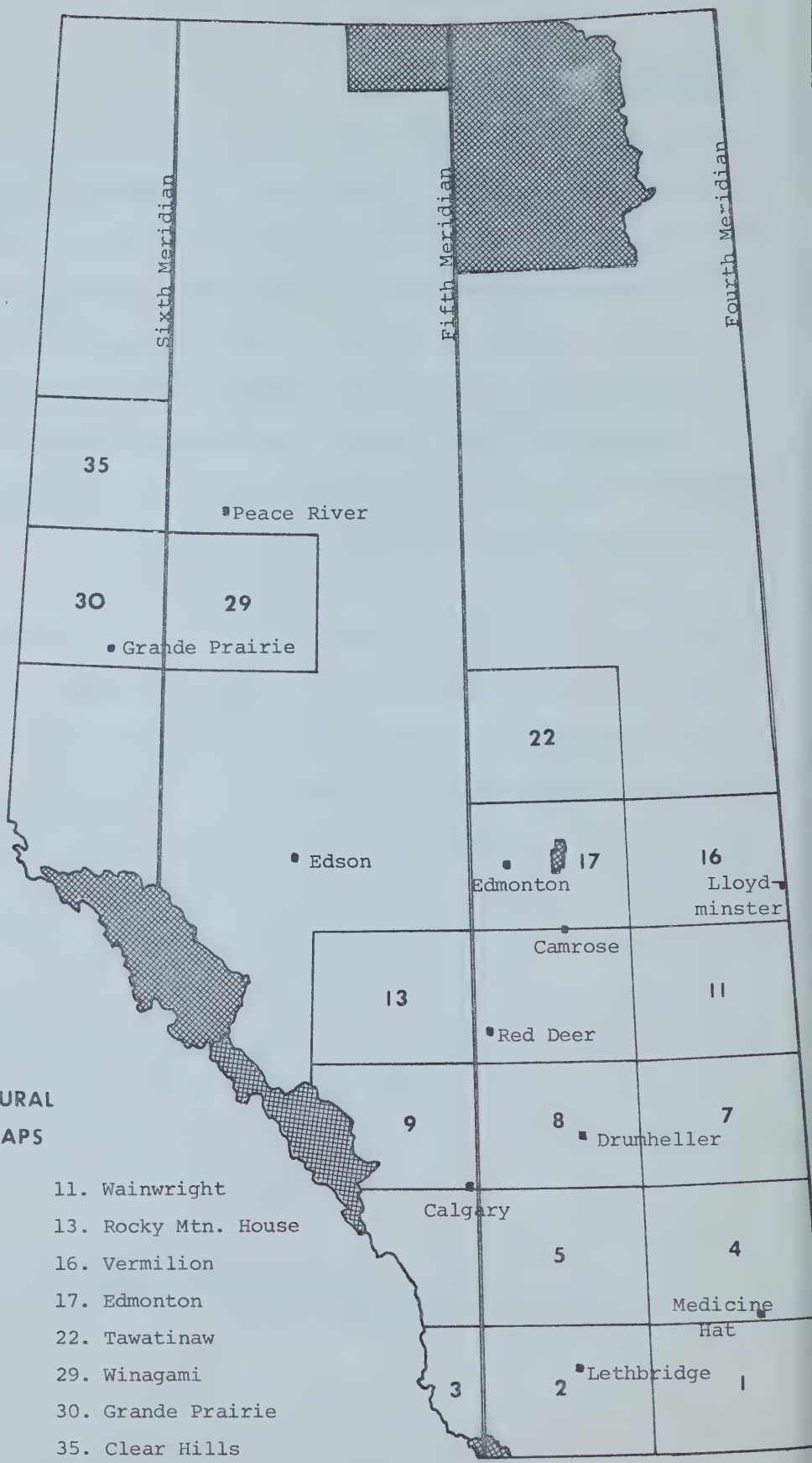


Figure 4

C.L.I. AGRICULTURAL CAPABILITY MAPS

1. Foremost
2. Lethbridge
3. Fernie
4. Medicine Hat
5. Gleichen
7. Oyen
8. Drumheller
9. Calgary
11. Wainwright
13. Rocky Mtn. House
16. Vermilion
17. Edmonton
22. Tawatinaw
29. Winagami
30. Grande Prairie
35. Clear Hills

TABLE 6

AGRICULTURAL VALUES IN RELATION TO C.L.I. RATINGS
(Individual C.L.I. Maps)

Agriculture Capability Map & Rating	Total Number of Observations	Total Acreage Sold 1971	Average Value Per Acre 1971 $	Standard Deviation Per Acre 1971 $	Average Value Per Acre 1970 $
Foremost					
1	26	4818	74.72	48.56	73.76
2	61	17034	47.63	29.50	54.38
3	122	30052	62.54	42.59	54.28
4	175	45087	53.86	27.24	46.07
5	45	10795	45.80	34.34	31.88
6	47	10520	31.64	24.50	56.63
Total	476	118306	53.31		51.82
Lethbridge					
1	34	4902	153.01	108.54	-----
2	240	50772	94.33	102.49	-----
3	143	32738	87.64	86.83	-----
4	86	19886	68.80	46.58	-----
5	55	14294	59.28	28.57	-----
6	46	9208	46.02	44.18	-----
7	4	803	109.02	34.42	-----
Total	608	132603	83.98		
Fernie					
2	15	3427	77.54	23.83	59.80
3	10	2239	93.51	26.45	86.52
4	7	1704	75.63	23.16	-----
5	42	9349	67.11	42.24	55.52
6	25	5962	70.41	53.49	52.71
Total	99	22681	72.80		57.43
Medicine Hat					
1	22	3541	106.84	54.33	118.75
2	24	4216	128.56	46.14	60.91
3	24	4461	66.62	34.58	79.24
4	84	20190	46.66	36.11	35.21
5	39	10438	39.67	44.70	57.03
6	15	4239	53.76	39.72	124.98
7	3	1043	55.57	53.31	-----
Total	211	48128	59.41		55.06
Gleichen					
1	14	3315	97.77	8.83	162.50
2	180	40461	91.47	52.00	83.02
3	231	52814	83.05	50.92	71.29
4	120	31293	71.01	43.20	49.40
5	60	18170	61.13	44.25	59.79
6	18	5491	71.02	46.02	36.04
Total	623	151544	80.07		66.20
Oyen					
3	38	8560	38.02	21.47	37.36
4	123	32953	30.53	30.37	35.78
5	35	7788	22.22	16.43	19.26
6	11	3498	22.29	6.48	17.27
Total	207	52799	29.97		32.60
Drumheller					
1	107	24701	108.50	46.51	-----
2	68	14399	112.32	52.23	-----
3	251	63920	74.13	43.37	-----
4	123	31405	49.23	35.08	-----
5	48	10648	56.82	47.42	-----
6	24	5722	27.51	25.81	-----
7	18	4080	35.22	29.21	-----
Total	639	154875	74.18		
Calgary					
1	10	1560	136.02	48.44	-----
2	13	2659	113.56	75.64	-----
3	29	6722	100.62	66.92	-----
4	13	2545	70.03	41.40	-----
5	49	10289	88.69	48.36	-----
6	13	2671	110.56	70.54	-----
7	1	151	25.53	-----	-----
9 (Organic)	1	326	153.37	-----	-----
Total	129	26923	97.70		

TABLE 8 CONTINUED

AGRICULTURAL VALUES IN RELATION TO C.L.I. RATINGS
(Individual C.L.I. Maps)

Agriculture Capability Map & Rating	Total Number of Observations	Total Acreage Sold 1971	Average Value Per Acre 1971 $	Standard Deviation Per Acre 1971 $	Average Value Per Acre 1970 $
Wainwright					
1	6	1436	42.48	36.32	-----
2	97	19543	63.65	32.34	-----
3	320	70836	51.89	34.29	-----
4	163	39320	30.63	21.41	-----
5	43	10514	33.27	20.80	-----
6	88	19730	26.15	17.81	-----
Total	717	161379	43.69		
Rocky Mountain House					
2	58	10954	99.20	58.52	89.69
3	50	9381	87.38	45.37	82.38
4	128	22843	58.11	56.16	53.32
5	69	12947	49.61	65.19	41.34
6	20	3666	42.89	28.81	41.06
7	6	877	65.33	72.37	85.71
9 (Organic)	46	7912	42.56	33.32	42.09
Total	377	68580	59.70		53.75
Vermilion					
1	16	2466	40.77	16.18	-----
2	158	33578	59.39	59.40	41.07
3	262	50901	44.25	28.65	40.95
4	149	29600	32.34	20.81	36.33
5	60	12180	26.35	17.27	23.43
6	34	8436	40.05	29.09	35.57
9 (Organic)	2	320	12.50	6.26	-----
Total	681	137481	43.40		38.34
Edmonton					
1	73	10869	102.47	74.67	71.44
2	258	44411	65.12	34.84	63.60
3	117	19956	66.49	94.65	55.34
4	32	4532	66.96	57.53	66.95
5	15	2258	83.58	59.39	54.75
6	22	3914	52.54	39.80	45.05
9 (Organic)	14	2136	71.98	84.84	37.01
Total	531	88076	70.22		60.52
Tawatinaw					
1	28	4372	102.61	56.15	125.00
2	38	6354	67.00	43.88	88.88
3	170	27883	55.55	38.47	51.32
4	260	48681	31.92	26.95	31.99
5	36	7135	24.25	19.53	14.05
6	32	5524	35.75	42.69	36.93
7	1	61	32.95	.03	-----
9 (Organic)	48	8114	35.26	59.41	36.79
Total	613	108124	42.87		42.05
Winagami					
2	86	15445	54.55	23.95	50.74
3	97	17893	41.46	28.14	37.00
4	41	8980	33.92	22.91	24.59
5	2	230	41.27	14.72	19.48
7	9	1481	16.14	8.00	-----
9 (Organic)	8	1279	23.85	9.05	-----
Total	243	45308	43.10		38.68
Grande Prairie					
2	158	31714	55.16	47.33	50.41
3	126	24483	44.47	37.47	54.05
4	71	14776	30.45	19.38	26.37
5	19	3316	29.78	22.36	10.16
6	4	646	62.02	116.65	66.81
7	32	5572	49.20	69.14	71.22
9 (Organic)	3	639	23.01	24.76	-----
Total	413	81146	45.79		49.06
Clear Hills					
2	51	11859	41.68	21.88	72.10
3	63	13691	30.38	15.84	22.54
4	23	5420	25.72	9.42	12.01
5	8	1597	17.76	7.72	13.38
6	2	321	23.99	8.50	-----
7	4	639	31.69	6.74	46.96
Total	151	33527	32.99		32.49

In order to present the information given in Table 6 on a broader regional basis, the province was divided into 6 regions using county, M.D., I.D. and S.A. boundaries. These regions, illustrated in Figure 5, were based upon similarities in geographic characteristics. The counties, M.D.s, I.D.s and S.A.s comprising these regions are listed below.

Peace River Region	- Counties:	#1
	M.D.s :	#130,133, 135, 136
	I.D.s :	#16, 17, 19, 20, 21, 22, and 23
Northern Alberta	- Counties:	#7, 11, 12, 13, 19, 28, 31
	M.D.s :	#87, 90, 92
	I.D.s :	#14, 15, 18
East-Central Alberta	- Counties:	#6, 9, 18, 21, 22, 24, 27, 29, 30
	M.D.s :	#52, 61
West-Central Alberta	- Counties:	#3, 10, 14, 17, 20, 23, 25
	M.D.s :	#31, 44
	I.D.s :	#8, 10, 11
South-Central Alberta	- Counties:	#2, 16, 26
	M.D.s :	#6, 9, 26, 47, 48
	I.D.s :	#5, 6, 7
South-Eastern Alberta	- Counties:	#4, 5, 8
	M.D.s :	#14, 34
	I.D.s :	#1, 2
	S.A.s :	#2, 3, 4

Table 7 on page 25 outlines average regional values in relation to C.L.I. agricultural capability ratings.

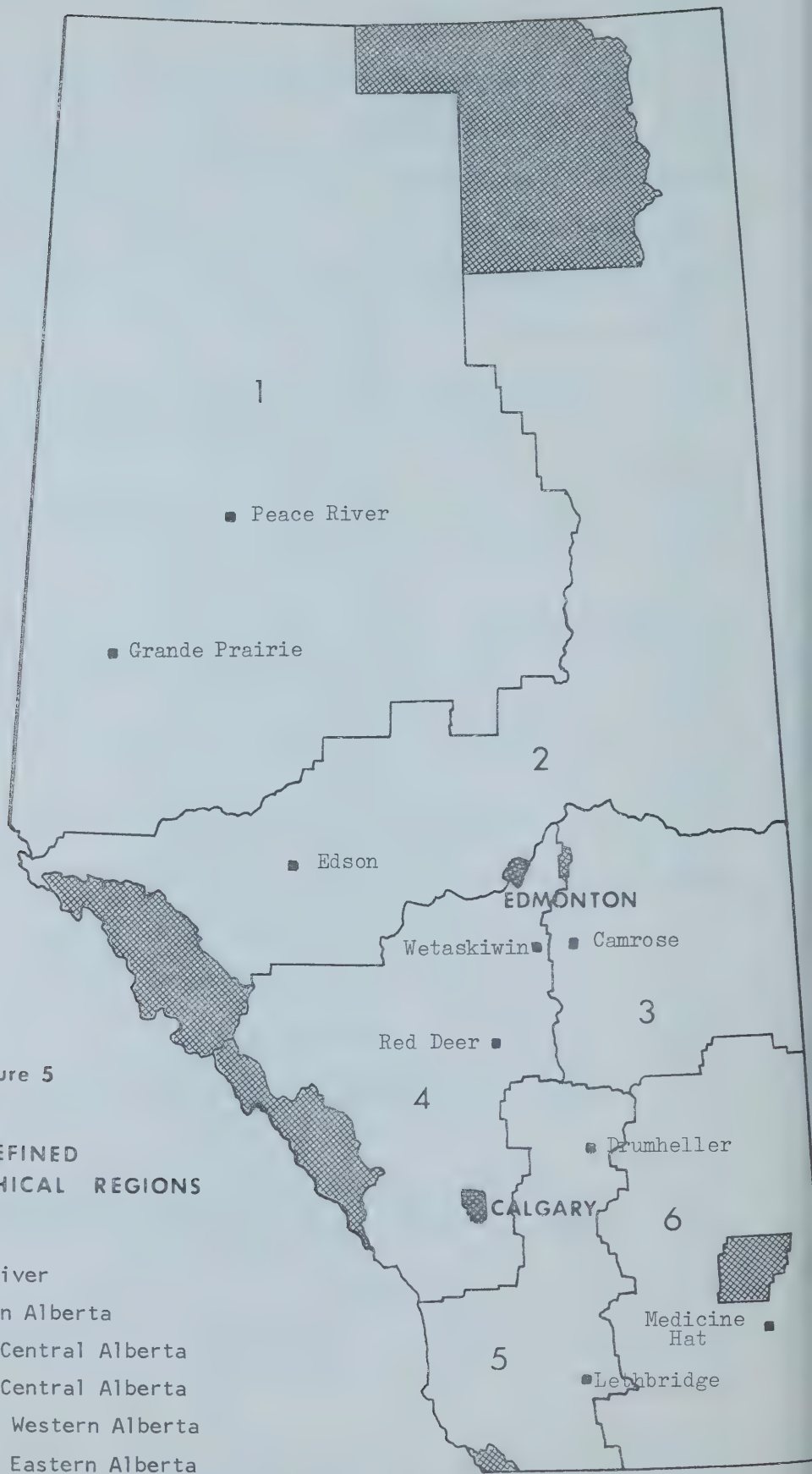


Figure 5

DEFINED GEOGRAPHICAL REGIONS

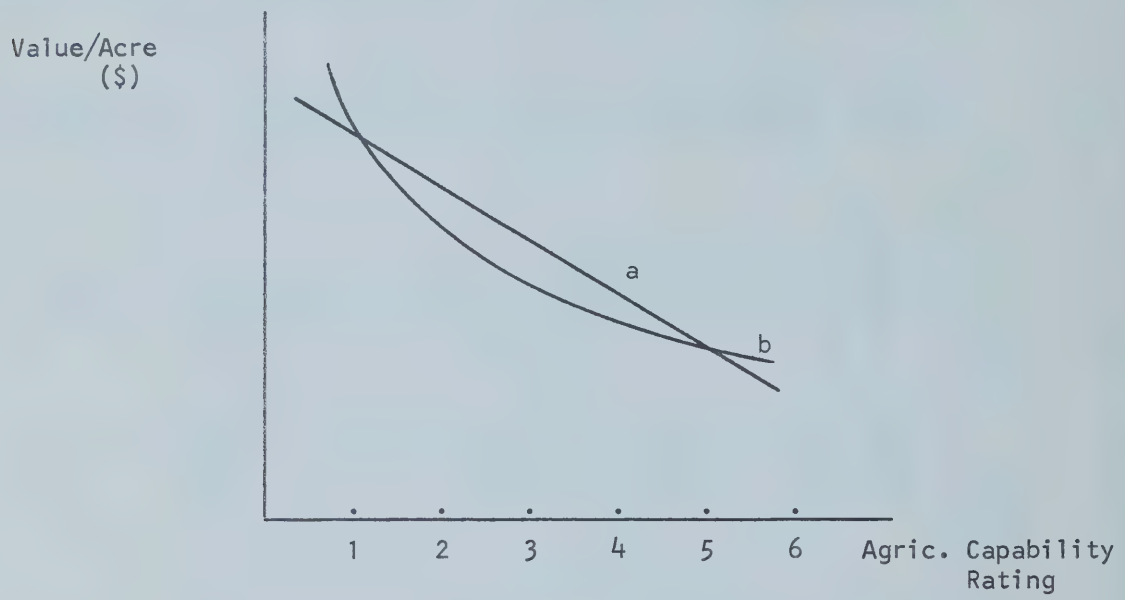
1. Peace River
2. Northern Alberta
3. East - Central Alberta
4. West - Central Alberta
5. South - Western Alberta
6. South - Eastern Alberta

TABLE 7

AGRICULTURAL VALUES IN RELATION TO C.L.I. RATINGS BY REGION, 1971

Region and CLI Rating	Total Number of Observations	Total Acreage Sold	Average Value Per Acre $	Standard Deviation Per Acre $
Peace River				
2	295	59018	52.29	38.45
3	286	56067	40.07	30.97
4	137	29814	30.39	19.26
5	29	5143	26.04	19.69
6	6	966	49.39	97.10
7	46	7843	41.07	59.90
9 (Organic)	11	1918	23.57	16.08
Total	810	160769	42.22	
Northern Alberta				
1	46	7519	123.47	81.54
2	71	11612	67.82	40.03
3	229	38738	53.39	41.99
4	295	54118	32.59	31.24
5	61	11234	31.73	35.65
6	45	8168	36.49	39.29
7	1	61	32.95	.03
9 (Organic)	63	10410	42.35	66.84
Total	811	141860	46.84	
East-Central Alberta				
1	51	7893	48.97	31.58
2	454	87880	61.62	44.54
3	625	130431	48.62	31.29
4	307	67758	32.53	21.23
5	88	19876	30.42	19.09
6	122	28146	30.97	22.31
Total	1647	341984	46.27	
West-Central Alberta				
1	93	19945	117.22	49.12
2	121	23973	104.74	68.35
3	134	25420	96.85	95.46
4	159	28913	59.30	55.49
5	131	25759	71.73	65.42
6	43	7913	73.56	58.19
7	6	877	65.33	72.37
9 (Organic)	47	8238	46.95	39.15
Total	734	141038	84.36	
South-Central Alberta				
1	77	14535	105.62	57.98
2	391	82022	93.64	82.54
3	516	125072	82.40	57.30
4	233	58724	69.03	43.03
5	160	39939	62.11	36.16
6	94	22160	53.49	48.41
7	22	4883	47.35	40.70
Total	1493	347335	79.09	
South-Eastern Alberta				
1	69	12090	102.64	71.71
2	171	41781	76.91	56.85
3	263	60796	62.95	44.23
4	467	119885	45.17	31.95
5	156	39997	39.34	35.40
6	91	22195	36.14	30.82
7	3	1043	55.57	53.31
Total	1220	297787	49.41	

Regression analysis, using both linear and curvilinear functions were used to indicate the degree of association or correlation between C.L.I. ratings and agricultural real estate values. This hypothesized relationship can be shown graphically in the following manner.



Line 'a' depicts a declining linear relationship between the dependent variable, value per acre and the independent variable, agricultural capability rating. Line 'b' depicts a declining curvilinear relationship between the value per acre and the C.L.I. rating. A curvilinear function permits non-constant changes in value in relation to C.L.I. ratings to occur.

For this analysis only soils with agricultural capability were used (classes 1 to 6). The following results were obtained.

	Linear Function		Curvilinear Function	
	R^2	F	R^2	F
Peace River Region	4.7%	36.92	11.0%	92.95
Northern Alberta	13.7%	118.38	16.7%	148.73
East-Central Alberta	6.5%	114.13	9.0%	163.50
West-Central Alberta	4.0%	28.47	8.4%	62.00
South-Western Alberta	4.1%	63.20	7.8%	124.62
South-Eastern Alberta	13.7%	192.43	11.8%	162.67

The R^2 value indicates (in percentage) the degree of explanation between real estate values per acre and the C.L.I. rating. The F value indicates the significance of the R^2 value. Using the 99% level of confidence, the appropriate F value is 6.63. A calculated F value greater than 6.63 indicates that the derived R^2 values are statistically significant. In all cases, the indicated degree of explanation, although relatively small, is statistically significant. Comparison of the results of the linear and curvilinear regression functions, indicates that the latter function better describes the data as the R^2 values (with the exception of south-eastern Alberta) are higher. Examination of the average values in Table 5 and 7 indicate the probability of a better fit using a curvilinear function as average values generally decline from class 1 to class 4 land but exhibit little difference below class 4.

Using the curvilinear function, the degree of explanation between real estate values and C.L.I. ratings ranged from 16.7% in northern Alberta to 7.8% in south-western Alberta. In practical terms there are several reasons why these results could be expected. Some of the most important reasons are:

1. The C.L.I. agricultural ratings are based upon specific soil and climatic limitations which are related to gross productivity considerations. However, the appropriate criterion in determining land value is the net productivity of the land.

2. Many sales represent additions to current agricultural units. As such, individual sales values may deviate considerably from the expected 'normal' value. The net productivity of the entire unit rather than the productivity of the unit purchased is the important consideration upon which the price is determined.

3. The values in this report are real estate values, consequently, sales which have a significant amount of buildings could have an over-riding effect upon the expected relationship between C.L.I. ratings and land values. On balance, considering that many sales have no buildings or buildings which add little to the market value of the property, one would not expect a large source of error from this cause.

4. The soil capability may not be uniform for the entire parcel transacted.

5. The relative degree of knowledge of the buyer and seller will influence the price paid.

In summary, the soil capability rating is only one factor which influences real estate prices. Many other factors are considered by the individual.

CHAPTER IV

REAL ESTATE VALUES IN THE URBAN PERIPHERIES

The value of real estate is often influenced by its proximity to urban areas. Many people, for example, choose to live on acreages near the city because of the attractions of rural living. As well, speculative transactions frequently occur. This influence exerts an upward pressure on the value of all real estate, particularly near the larger urban centres. In this report, all sales within a defined area of Edmonton and Calgary were analyzed separately. The Edmonton urban periphery was defined as the region inclusive of townships 49 to 56 and range 20, west of the 4th to range 1, west of the 5th meridian. The Calgary urban periphery was defined as the region inclusive of townships 20 to 27 and range 26, west of the 4th to range 5, west of the 5th meridian. Table 8 outlines average real estate values per acre in these regions in relation to various size classes of transactions.

Figures 6 and 7 on the following pages illustrate the geographic pattern of real estate values within the peripheries of Edmonton and Calgary. It is interesting to note that the highest priced real estate generally is found in a concentric pattern adjoining the city boundaries. Values decline as distances from the cities increase.

TABLE 8

REAL ESTATE VALUES IN THE URBAN PERIPHERIES

Region	Size Class (Ac)	Number of Observations	Total Acreage Sold (Ac)	Average Value Per Acre $
Edmonton Periphery	0+ - 5	62	109	8218.59
	5+ - 10	22	185	2071.80
	10+ - 60	66	2258	578.11
	60+ - 150	157	14196	261.47
	150+ - 170	303	48037	158.39
	>170	83	26601	228.42
	*	10	--	--
	Total	703	91386	218.60
Calgary Periphery	0+ - 5	16	34	4459.36
	5+ - 10	7	59	2418.85
	10+ - 60	213	5641	580.55
	60+ - 150	108	11268	284.93
	150+ - 170	225	35766	181.87
	>170	140	50613	116.28
	*	6	--	--
	Total	715	103381	185.44

* Acreage unavailable

Real Estate values in the Edmonton region, overall, are somewhat higher than in the Calgary region. This is particularly influenced by the higher value for the small acreage sales in the Edmonton region. Values for the other comparable size classes (with the exception of sales greater than 170 acres in size) do not differ a great deal between these two regions.

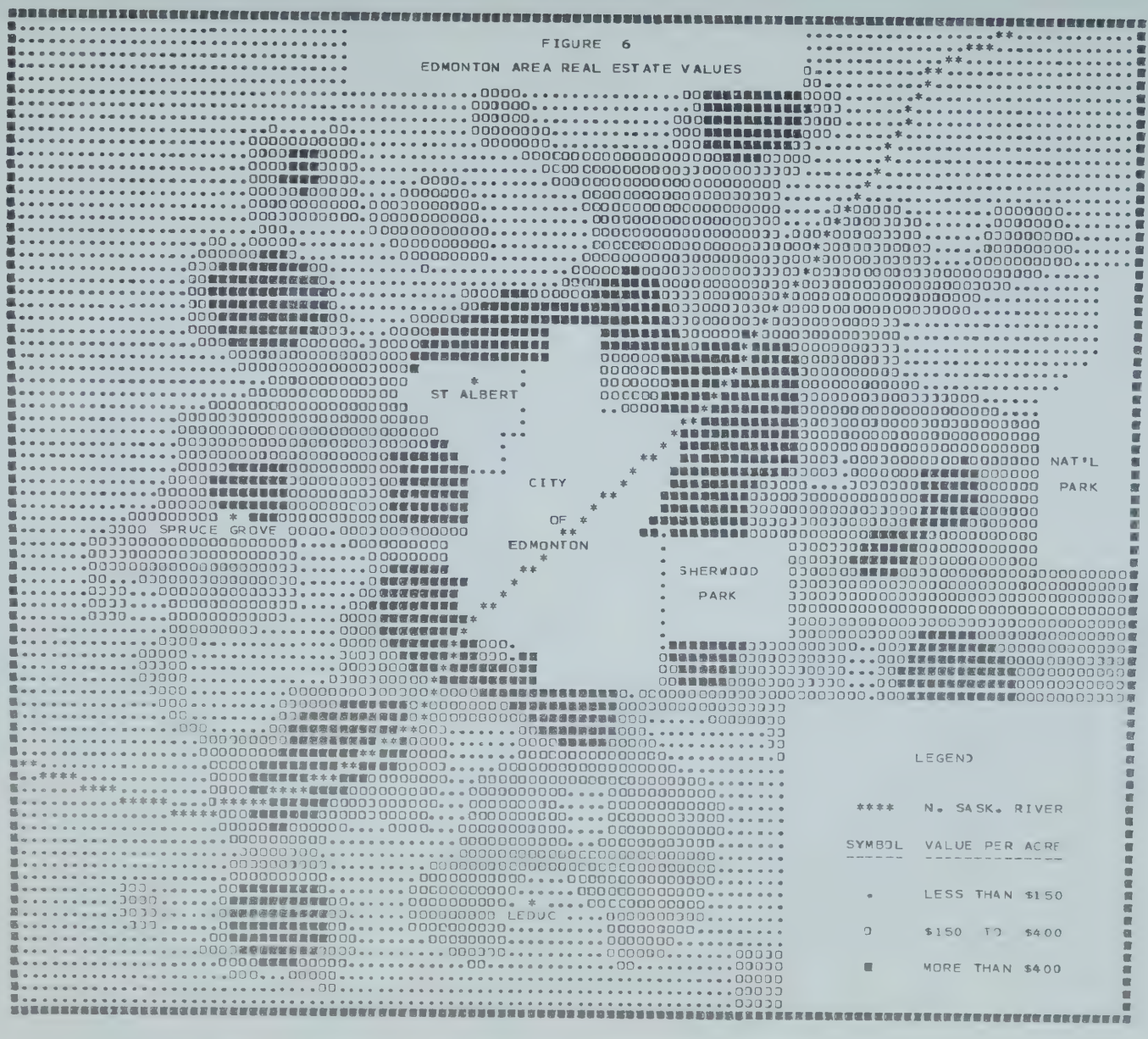


FIGURE 6
EDMONTON AREA REAL ESTATE VALUES
ST ALBERT
CITY
OF
EDMONTON
SPRUCE GROVE
SHERWOOD
PARK
NAT'L
PARK
LEDUC
LEGEND
**** N. SASK. RIVER
SYMBOL VALUE PER ACRE
. LESS THAN $150
O $150 TO $400
■ MORE THAN $400

SYMAP

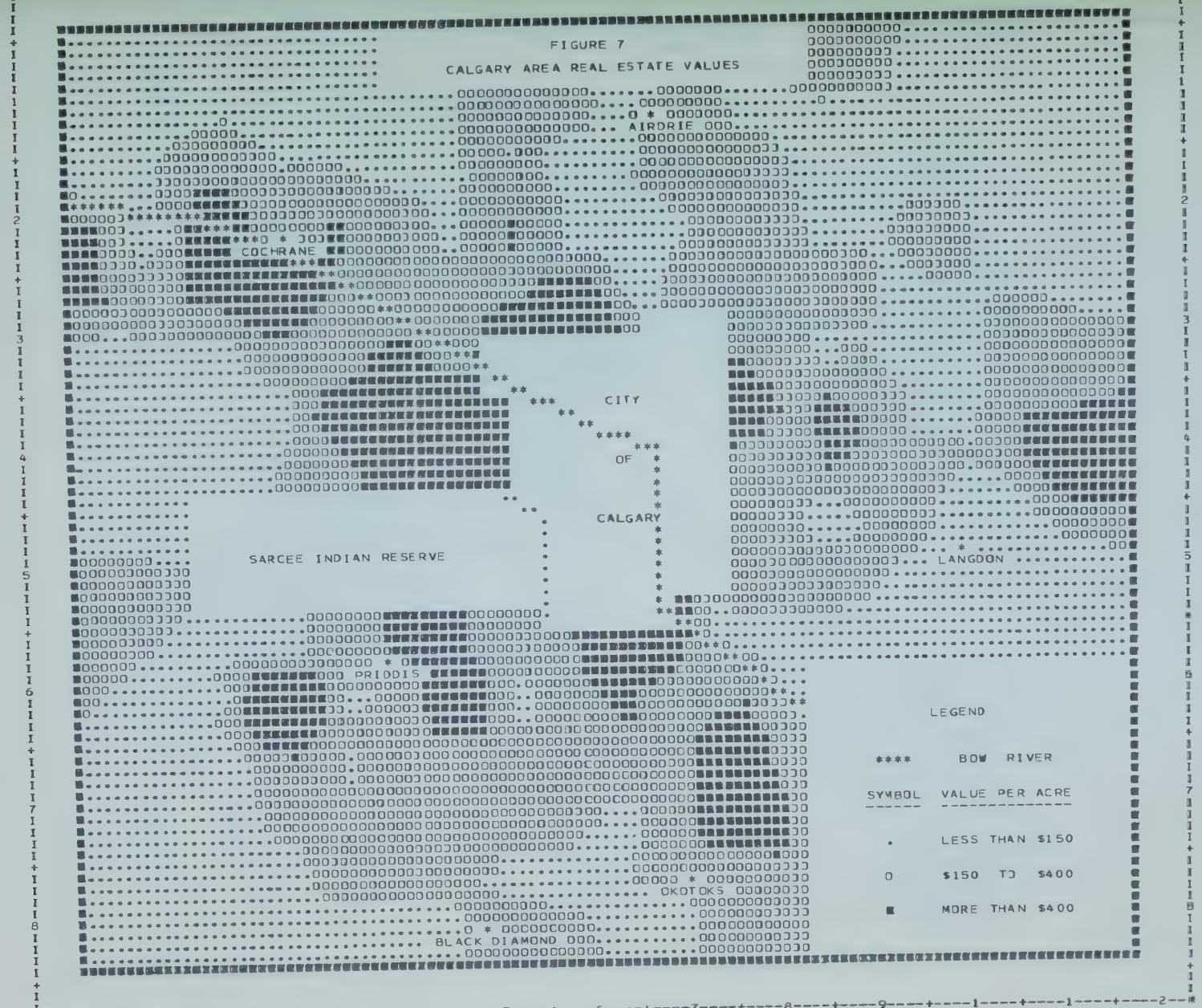


FIGURE 7
CALGARY AREA REAL ESTATE VALUES
AIRDRIE
COCHRANE
CITY
OF
CALGARY
SARCEE INDIAN RESERVE
LANGDON
PRIDDIS
OKOTOKS
BLACK DIAMOND
LEGEND
**** BOW RIVER
SYMBOL VALUE PER ACRE
. LESS THAN $150
O $150 TO $400
■ MORE THAN $400
SYMAP